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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/597,200	07/14/2006	Jong-Lam Lee	P2381US00	7656
58027 7590 04/06/2009 H.C. PARK & ASSOCIATES, PLC 8500 LEESBURG PIKE SUITE 7500 VIENNA, VA 22182			EXAMINER NGUYEN, THINH T	
			ART UNIT 2818	PAPER NUMBER
			NOTIFICATION DATE 04/06/2009	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PATENT@PARK-LAW.COM

Office Action Summary	Application No. 10/597,200	Applicant(s) LEE, JONG-LAM	
	Examiner THINH T. NGUYEN	Art Unit 2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 8-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/14/06, 9/19/06, 6/30/08</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED OFFICE ACTION

1. Applicant's election of claims 1-7 pertains to group I for prosecution without traverse in the communication with the Office on February 3rd 2009 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that forms the basis for the rejections under this section made in this office action.

A person shall be entitled to a patent unless --

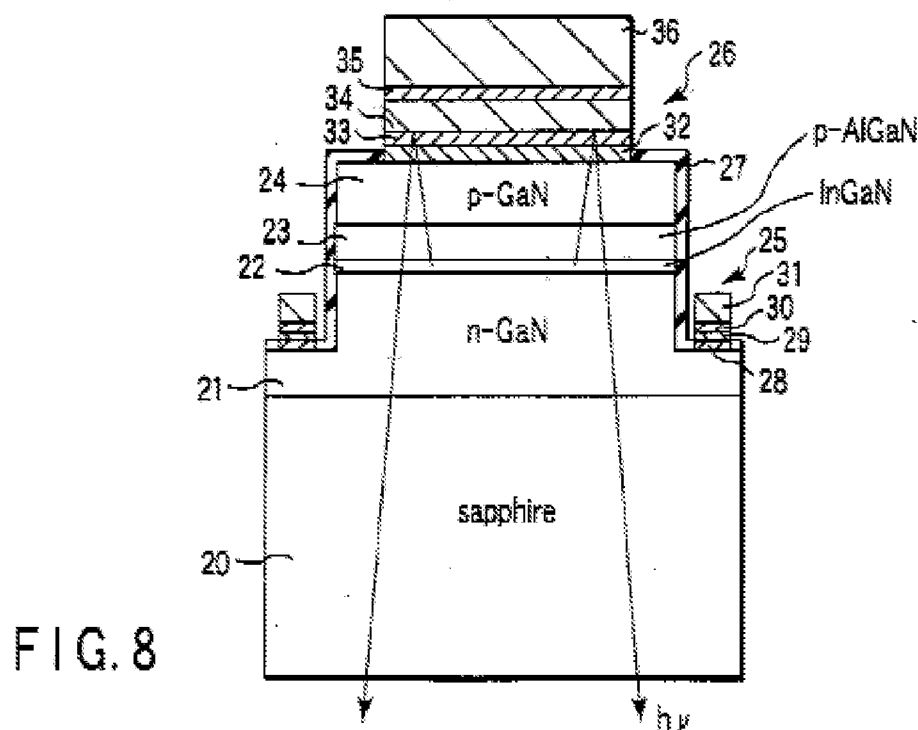
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 1-7 are rejected under 35 U.S.C. 102(b/e) as being anticipated by Okazaki et al. (U.S. Patent Application Publication US 2003/0209720 A1) thereafter Okazaki 720.

With regard to claim 1, Okazaki 720. discloses (the abstract, fig 8) a gallium nitride-based III-V group compound semiconductor device comprising (for the P-side electrode in fig 8) :a gallium nitride-based semiconductor layer(fig 8 layer 21 or 24) ; and an ohmic electrode layer formed on the gallium nitride-based semiconductor layer,wherein the ohmic electrode layer comprises a contact metal layer (layer 32 fig 8, paragraph [0097]), a reflective metal layer(fig 8 layer 34, the abstract, paragraph [0097]) and a diffusion barrier layer.(fig 8, layer 33, the abstract, paragraph [0097}) or (for the N side electrode) , (the abstract, fig 8) A gallium nitride-based III-V group compound semiconductor device comprising: a gallium nitride-based

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semiconductor layer(fig 8 layer 21) ; and an ohmic electrode layer formed on the gallium nitride-based semiconductor layer,wherein the ohmic electrode layer comprises a contact metal layer, a reflective metal layer, and a diffusion barrier layer. (fig 8 layer 28,29,30,paragraph [0097]



Okazaki 720. DISCLOSURE

With regard to claim 2 , Okazaki 720 discloses a Gallium Nitride device wherein the ohmic electrode layer further comprises at least one bonding metal layer (fig 8, the abstract ,

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paragraph [0097]). for the P-side electrode (layer 35 or 36, fig 8, paragraph [0097]). and for the N-side Electrode (fig 8 layer 31 paragraph [0097]).

With regard to claim 3, Okazaki 720 discloses a Gallium Nitride device (fig 8 layer 28, layer 29 , layer 30 , and layer 31, paragraph [0097]),. wherein the ohmic electrode layer is formed by sequentially laminating the contact metal layer (fig 8 layer 28) the reflective metal layer,(fig 8 layer 30) the diffusion barrier layer (fig 8 layer 30) , and the bonding metal layer fig 8 layer 31)

With regard to claim 4, Okazaki 720 discloses a Gallium Nitride device wherein the contact metal layer comprises at least one of Ni, Ir, Pt, Pd, Au, Ti, Ru, W, Ta, V, Co, Os, Re, and Rh.

Note that For the P-side electrode, Okazaki 720 discloses that the contact metal layer 32 is made of Ni (fig 8, layer 32,the abstract, paragraph[0097]) or for the N-side electrode, the contact layer 28 in fig 8 is made of Ti (paragraph [0097])

With regard to claim 5, Okazaki 720 discloses a Gallium Nitride device wherein the reflective metal layer comprises at least one of Al and Ag (fig 8 , layer 29 , paragraph [0097]) layer 29 is made of Al.

With regard to claim 6, Okazaki 720 discloses a Gallium Nitride device wherein the diffusion barrier layer comprises at least one of Ru, Ir, Re, Rh, Os, V, Ta, W, ITO (Indium Tin Oxide), IZO (Indium Zinc oxide), RuO₂, VO₂, MgO, IrO₂, ReO₂, RhO₂, OsO₂, Ta₂O₃, and WO₂ (paragraph [0134]).

With regard to claim 7 , in case claim 7 depends on claim 2, Okazaki 720 discloses a Gallium Nitride device wherein the bonding metal layer comprises first and second bonding

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metal layers, said first bonding metal layer comprising at least one of Ni, Cr, Ti, Pd, Ru, Ir, Rh, Re, Os, V, and Ta, said second bonding metal layer comprising at least one of Au, Pd, and Pt. (fig 8 layer 35 and 36 , Okazaki 720 discloses that layer 35 is made of Titanium and layer 36 is made of Gold or Au (paragraph [0097])

Claim Rejections - 35 USC § 103

4. The following is a quotation of U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 3, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okazaki et al. (U.S. Patent Application Publication US 2003/0209720 A1) thereafter Okazaki 720.

With regard to claim 3, Okazaki 720 discloses all the invention in including a contact metal layer (fig 8, layer 32) , the reflective metal layer(fig 8 layer 34, the diffusion barrier layer (fig 8 layer 33) , and the bonding metal layer (fig 8 layer 35) .

Not specific in Okazaki 720 is that the limitation wherein the contact metal layer, the reflective metal layer, the diffusion barrier layer, and the bonding metal layer are laminated in sequence of order.

This Limitation, however, is considered obvious since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art. In re Einstein, 8 USPQ 167.(in this case it a mere reversal of layer 33 and 34 in fig 8 of Okazaki 720 disclosure) .

With regard to claim 7 , in case claim 7 depends on claim 3, Okazaki 720 discloses a Gallium Nitride device wherein the bonding metal layer comprises first and second bonding metal layers, said first bonding metal layer comprising at least one of Ni, Cr, Ti, Pd, Ru, Ir, Rh, Re, Os, V, and Ta, said second bonding metal layer comprising at least one of Au, Pd, and Pt. (fig 8 layer 35 and 36 , Okazaki 720 discloses that layer 35 is made of Titanium and layer 36 is made of Gold or Au (paragraph [0097])

6. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and the page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

7. A shortened statutory period for response to this action is set to expire 3 (three) months and 0 (zero) day from the day of this letter. Failure to respond within the period for response will cause the application to be abandoned (see M.P.E.P. 710.02(b)).

8. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d) which papers have been placed of record in the file.

CONCLUSION

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thinh T Nguyen whose telephone number is 571-272-1790. The examiner can normally be reached on Monday-Friday 9:30am-6: 30pm.If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke can be reached at 571-272-1657.The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval [PAIR] system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Thinh T. Nguyen/

Patent Examiner
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